

Docket No.: 1422-0655PUS1  
(PATENT)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of:  
Makoto ISHIKAWA et al.

Application No.: 10/518,926

Filed: December 23, 2004

For: OIL-IN-WATER EMULSION  
COMPOSITION

Confirmation No.: 7260

Art Unit: 1712

Examiner: Kugel, Timothy J.

**DECLARATION UNDER 37 CFR 1.132**

MS AF  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

I, Makoto ISHIKAWA, residing in Mie, Japan, hereby declares and states as follows:

1. That I am one of the co-inventors of U.S. Application Serial No. 10/518,926 filed on December 23, 2004, entitled OIL-IN-WATER EMULSION COMPOSITION. I am thoroughly familiar with the contents of said Application, its prosecution before the United States Patent and Trademark Office and the references cited therein.

Application No.: 10/518,926

Docket No.: 1422-0655PUS1

2. That I am a graduate of University of the Ryukyus, Faculty of Agriculture and received a master's degree in the year 1994, majoring in bioscience and biotechnology.

3. That I have been employed in Taiyo Kagaku Co., Ltd. since 1994 and have been assigned to the Research Laboratories.

4. That I have been involved in the research and development of emulsified functional oils and fats formulation since 1999.

5. That the following experiments were conducted by myself or under my direct supervision and control in order to verify that sucrose acetate isobutyrate used in the present invention is clearly distinguishable in suppression of unpleasant fish odor from other sucrose fatty acid esters.

#### EXPERIMENTAL METHOD

##### Follow-up Examples A to D

##### [Preparation of Oil-in-Water Droplet Emulsion Compositions]

DHA emulsions were prepared in the same manner as in Example 1 of the present invention except that the sucrose acetate isobutyrate of Example 1 was replaced with a sucrose fatty acid ester A, B, C, or D, each having HLB of 1.0 in the following formulations shown in Table I.

Application No.: 10/518,926

Docket No.: 1422-0655PUS1

Table I

Raw Materials	
22% DHA-Containing Purified Fish Oil	280 g
Sucrose Fatty Acid Ester (Each of Follow-up Ex. A to D)*	120 g
Vegetable Oil	30 g
Glycerol	320 g
Pentaglycerol Dimyristate	30 g
Pentaglycerol Dioleate	30 g
Ion-Exchanged Water	180 g

## \*Sucrose Fatty Acid Ester

Follow-up Example A: Sucrose Stearate Ester (HLB: 1.0)

Follow-up Example B: Sucrose Palmitate Ester (HLB: 1.0)

Follow-up Example C: Sucrose Oleate Ester (HLB: 1.0)

Follow-up Example D: Sucrose Laurate Ester (HLB: 1.0)

Oil-in-water droplet emulsion compositions having the formulations as shown in Table I were prepared in the same manner as in Example 1 of the present invention. Each of the resulting oil-in-water droplet emulsion compositions was added to a commercially available drink in the same manner as in Test Examples of the present invention. The resulting emulsion-containing drinks were compared with that used with the emulsion composition of Example 1 of the present invention. In addition, as a control, only DHA-containing purified fish oil was added to a commercially available drink.

## [Evaluation Methods]

## (1) Commercially Available Cow's Milk (MEGMILK)

Fifty grams of each of the prepared composition was added to 950 g of a commercially available cow's milk, and the mixture was homogenously mixed. The resulting mixture was warmed to 50°C, and a sensory test was conducted by 10 panelists. As a result, the number of panelists who did not strongly recognize fish odor in the case

Application No.: 10/518,926

Docket No.: 1422-0655PUS1

where the emulsion composition of Example 1 is used was large as compared to that of each of Follow-up Examples A to D. The results are shown in Table II.

(2) Commercially Available Yogurt Drink (Meiji Bulgaria Drinking Yogurt LB81 Plain)

Fifty grams of each of the prepared composition was added to 950 g of a commercially available yogurt drink, and the mixture was homogenously mixed. The resulting mixture was warmed to 40°C, and a sensory test was conducted by 10 panelists. As a result, the number of panelists who did not strongly recognize fish odor in the case where the emulsion composition of Example 1 is used was large as compared to that of each of Follow-up Examples A to D. The results are shown in Table II.

(3) Commercially Available Orally Taken Liquid Food (Meibalance 200 Vanilla)

Fifty grams of each of the prepared composition was added to 950 g of a commercially available orally taken liquid food, and the mixture was homogenously mixed. The resulting mixture was warmed to 40°C, and a sensory test was conducted by 10 panelists. As a result, the number of panelists who did not strongly recognize fish odor in the case where the emulsion composition of Example 1 is used was large as compared to that of each of Follow-up Examples A to D. The results are shown in Table II.

[Evaluation Criteria]

- : 0 to 2 individuals out of 10 recognize or slightly recognize fish odor.
- △: 3 to 5 individuals out of 10 recognize or slightly recognize fish odor.
- ×: 6 to 10 individuals out of 10 recognize or slightly recognize fish odor.

Application No.: 10/518,926

Docket No.: 1422-0655PUS1

RESULTS AND DISCUSSION

Table II

	Ex. 1 of Present Invention	Follow-up Ex. A	Follow-up Ex. B	Follow-up Ex. C	Follow-up Ex. D	Control
Commercially Available Cow's Milk	○	△	△	△	△	×
Commercially Available Yogurt Drink	○	△	△	△	△	×
Commercially Available Orally Taken Liquid Food	○	△	△	△	△	×

It can be seen from the above test results that among sucrose fatty acid esters, only sucrose acetate isobutyrate used in Example 1 of the present invention remarkably exhibits an action of suppressing unpleasant fish odor. This action is specific to sucrose acetate isobutyrate, not found in other sucrose fatty acid esters.

**Statement Under 18 U.S.C. § 1001**

I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: *January 23<sup>rd</sup>, 2008* By: *M. Ishikawa*

Makoto ISHIKAWA